THE VETERINARY RECORD

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FOUNDED BY WILLIAM HUNTING, F.R.C.V.S.

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THE DECLINE OF GLANDERS.

From time to time, in addition to the Board of Agriculture's returns, information reaches us which illustrates the decline of glanders. One instance occurs in the veterinary section of the annual report of the Medical Officer of Health for Birmingham dealing with the year 1916, an abstract of which we print to-day. Only one case of glanders occurred in Birmingham in 1916, and this was "undoubtedly introduced from outside." This means that one of the largest cities in England no longer contains centres of glanders within its boundaries—it may be regarded as free from the disease, though still exposed to introductions from without. We all know the part which large cities have played in maintaining and spreading glanders, and its elimination from them is one of the best signs of our progress against the disease.

An approximate estimate of the total glanders return for Great Britain may now be formed. Roughly, it will represent an average of one outbreak in every fortnight. This relates only to the civil horse population—we do not know how much glanders exists in the army. The possibility of a not inconsiderable re-introduction of glanders from the army is the one contingency we have to fear in the eradication of the disease from the kingdom; and it could easily be met. Mallein testing immediately before disbandment of all army horses intended for sale would reduce the danger to negligible proportions.

THE NECESSITY FOR MEAT INSPECTION.

In Mr. Malcolm's report mentioned above, there is a valid argument for systematic meat inspection. Six cases of anthrax occurred in the Birmingham district in 1916; and in two of them the carcases were sent to the abattoir with a view to human consumption. If one-third, or anything like that proportion, of the anthrax carcases of such a district as the Birmingham one are submitted for sale in this manner, what is likely to be happening in less well-regulated localities. As many or more may be sent; and it is certain that in very many parts of England there is far less chance of detection than in Birmingham.

Mr. Malcolm justly remarks that these two cases prove the necessity for meat inspection; and he has done a public service by recording them. They may well be used by public health propagandists all over the country. The recognised public apathy regarding meat inspection is chiefly due to the general ignorance of the dangers pertaining to meat. Nothing is more likely to quickly remove that ignorance than the widespread dissemination of definite evidence such as this.

UNDIAGNOSED.

By JAS. BROWN, M.R.C.V.S., Ramsey, Isle of Man.

I read with interest Mr. E. H. Pratt's communication under the above title in the *V. R.* of Dec. 8. I have had cases similar to that he describes, and also am not clear as to the cause of the disease. I relate a case which I have cause to remember, and which occurred in December of last year.

A yearling colt, taken from the field, was walked to the auction mart a distance of one mile, and there sold.

As the purchaser lived in the same direction, and had to pass by the late owner's farm, for convenience the colt was left there for the night, and was put into the same field as it had been taken from in the morning. Next morning the late owner saw the colt grazing in the field as usual. In the afternoon the owner arrived, intending to walk the colt home, when it was noticed to be ill. I was then called in, and on arrival found the colt lying on its side, occasionally looking round to the flank, would give a convulsive struggle, throw up the head and grind the teeth. Breathing hurried, membranes injected a bright red; temperature normal; pulse rapid and weak. After a deal of persuasion the colt rose, went down again in fifteen minutes, and never got on its feet again. When forced to walk it had a swinging gait, moved very stiffly, the muscles made a creaking sound as is sometimes produced by a pair of new boots. The urine was dark, coffee-coloured. He struggled frequently during the night and died the next day. Under the unforseen circumstances, they both declined ownership. I did not make *post mortem*. In these cases the vascular, nervous and renal systems are all more or less affected.

I have had cases in colts similar to this previously, single cases which one passes over; but three years ago, in the course of ten days, out of three outbreaks, five animals died. On one farm two colts were affected simultaneously, they were in a field, but were able to walk home, were put into loose boxes, went down and never got on their feet again.

Some days later and six miles from the previous farm, I was called to other two colts; they were found in the field in the morning unable to rise, and had to be brought in on sleighs. These four presented the same symptoms; membranes injected, hurried breathing, sweating, coffee-coloured urine, paralysis. They all died within 48 hours. Some days later I was called to another colt, five miles from last. This animal lived three days. The symptoms were of a milder type; ate a little at first, but paralysis set in later.

These cases are puzzling. Of course, they all presented symptoms similar to azoturia, but being affected in pairs, it points to some form of vegetable poison, although nothing of the kind could be discovered. An analysis of the ingesta was mentioned, but my clients declined to proceed in the matter.

All these cases occurred in young animals, unbroken, not housed, and exposed to all weathers; they were all in good, thriving condition. I have only seen such cases in November and December.

Is the affection induced by climatic conditions, or by some form of poisoning; or is azoturia common in young animals?

Treatment was very unsatisfactory. I have tried laxatives, followed up with stimulants; in the last case I tried Adrenalin chloride, but to no purpose.

A modification of the Roaring operation.

Coquot, in *Le Recueil de Médecine Vétérinaire*, for 1917, published an article describing a modification in the operative treatment of roaring. Many horses in the army are roarers and it is advisable to subject them to Williams' operation rather than discard them. The operation of arytenoidectomy, which Cadiot rendered fairly common in France, is now no longer performed. It has been replaced by the operation of Williams, which consists in the resection or ablation of the ventricle,

Coquot describes the method of performing the operation and its results. As is known, in consequence of the ablation of the ventricular sac, there is a cicatricial process which, by the retraction it causes, progressively withdraws the arytenoid from the median line. The ventricle of the glottis disappears, and the glottal space enlarges. Very often, however, the vocal cord does not follow the arytenoid in this process of retraction towards the exterior. It remains flaccid and inert, and forms a kind of fold which disturbs the passage of air.

To remedy this, Coquot performs an ablation of the median part of the vocal cord. He removes a square strip of from 10 to 12 millimetres in width. There is afterwards a more notable and rapid cicatricial contraction, which renders any folding of the cord impossible.

As a final precaution, Coquot recommends that, immediately after the operation is completed, a provisional tracheotomy tube should be introduced into the laryngeal wound, and brought into the trachea. This laryngo-tracheal tube, systematically employed, at once secures the animal from all danger from œdema of the glottis. The latter condition is always sudden in its appearance, and causes asphyxia and death unless treatment can be prompt. The tube is withdrawn four or five days after the operation.—(*La Clinica Veterinaria*).

Soap in Wound Treatment.

Ratinsky, in *La Presse Médicale* of 1916, published an article recommending soap in the treatment of wounds. Lucas Championnière had previously recommended the same substance. Ratinsky finds Marseilles soap, in the proportion of 25 grammes to the litre of water, especially useful. He washes the wound with this solution, and then applies compresses upon it. If the wound is anfractuous, he carefully causes the soap solution to penetrate into all its channels, and continues the washing until the granulations are well cleansed and the liquid collected is free from coagula, pus, or filaments. When the washing is finished he applies compresses impregnated with a 20% soap solution. This is prepared at the moment by vigorously rubbing cotton or gauze against a piece of soap, until a saturated and greasy solution is obtained. The compresses, before being applied, are manipulated between the hands in order to obtain a fine and abundant lather in their meshes, so that the compress assumes a porosity analogous to that of a fine sponge. This soap-saturated gauze is brought into contact with the wound in all its interstices and diverticulæ.

The compress acts like a locally applied sponge. It dilutes and aspirates the pus little by little as it is produced, while the strata of fine air-bubbles imprisoned in its meshes accomplish capillary drainage in a surprising manner The alkaline substances in the soapy solution, by their avidity for water, absorb abnormal liquids.—(*La Clinica Veterinaria*).

An Ointment for treating War Wounds.

P. Guillon, writing in *La Revue générale de Médecine Vétérinaire*, advises the following ointment for the treatment of septic, anfractuous, suppurating war wounds:—

Aristol	...	1½
Dermatol	...	1½
Salol	...	6
Lanoline	...	20
Vaseline	...	60

This is applied every three or four days.

W. R. C.

Royal College of Veterinary Surgeons.

EXAMINATIONS IN LONDON.

At a meeting of the Board of Examiners, held in London on December 7th, 1917, for the Written, and on December 7th for the Oral and Practical Examinations, the following gentlemen passed their Final Examination:—

Mr. J. D. Haywood	Mr. H. Cooper
H. C. Driver	C. S. Conder
C. J. Peach	S. H. Pettifer
T. Le Q. Blampied	F. J. Andrews

The following passed their Third Examination:

Mr. H. W. Brekke	Mr. H. Thornton
A. Bayly	I. R. R. Coleman†
C. H. P. King	H. J. Edwards
L. N. Devenish	F. L. Haydon *

The following passed his Second Examination:

Mr. H. Jerrom.

The following passed his First Examination:

Mr. N. S. King.

EXAMINATIONS IN LIVERPOOL.

The following passed their Final Examination;

Mr. C. Wadsworth	Mr. W. L. Marshall
W. F. Aston *	

The following passed his Third Examination:

Mr. A. Williams

The following passed their Second Examination:

Mr. H. S. Robinson	Mr. J. K. G. Sisson

EXAMINATIONS IN EDINBURGH.

The following passed their Final Examination:

Mr. A. N. Metcalfe	Mr. A. D. Sanderson
R. Beattie	T. A. Shaw
J. Litt	D. G. Wishart

The following passed his Second Examination:

Mr. D. Buchanan (Stable Management).

The following passed his First Examination:

Mr. John Lyon.

EXAMINATIONS IN GLASGOW.

The following passed his Third Examination:

Mr. C. Macpherson *

The following passed his Second Examination:

Mr. C. T. Murphy

EXAMINATIONS IN DUBLIN.

The following Students were successful in the recent Examinations at the R.C.V.I., Dublin.

The following passed their Final Examination;

Mr. J. J. Clune	Mr. W. Ford
J. J. English	W. J. Henigan
D. Mahony	G. P. Kennedy
P. McLaughlin	J. McCauley
T. A. O'Brien	C. E. McCrea
W. Walsh	A. H. Morris
W. E. Barry	J. P. Morris
M. Donohoe	J. Malone

The following passed their Third Examination:

Mr. J. C. Malone	Mr. G. West
M. A. O'Connor	W. White *
J. J. O'Donovan *	

The following passed the Examination in Stable Management:

Mr. A. J. Devine	Mr. M. A. O'Connor

The following passed their Second Examination:

Mr. T. Anderson	Mr. R. J. Nolan
J. V. Carroll	T. O'Carroll
C. A. Lister	J. Patterson
J. J. Lyons	

The following passed their First Examination:

Mr. W. J. Dill	Mr. J. O'Kane
J. Fitzgerald	P. Walton
T. Foley	A. F. Callanan
C. McCloskey	T. F. Connolly, M.A.*

Marked thus † passed with First Class Honours.
Marked thus * passed with Second Class Honours.

VETERINARY STUDENTS AND THE ARMY.

The following letter has been received by the Secretary of the Royal College of Veterinary Surgeons from the Ministry of National Service:—

THE MINISTRY OF NATIONAL SERVICE,
WESTMINSTER, S.W. 1.
17th December, 1917.

All Communications to be addressed to the Secretary quoting this reference: HD/DM. R.3./Stud 96.

Sir,

In reply to your letter of the 13th October with reference to Veterinary Students, I am instructed by the Minister of National Service to state that the recommendations made by the Council of the Royal College of Veterinary Surgeons have been carefully considered.

As regards Veterinary Students now serving with the Army as Officers or Privates, this Department will be prepared to recommend to the War Office the release of any students who have passed their first veterinary examination provided they are not being employed in the Army on Veterinary work and are in a medical category below B 1, or, in the case of Officers, are not fit for service overseas, and I am to request that the Royal College of Veterinary Surgeons will furnish this Department with particulars of any Officers and men now serving who comply with the above conditions and whose release is desired. This Department would also be prepared to consider the cases of veterinary students who have passed their first veterinary examination and are now serving in the Navy with a view to recommending their release, if, on enquiry, it is found that their services can be spared by the Admiralty.

As regards second year veterinary students who are now studying at one of the affiliated schools referred to in your letter, I am to remind you that under current instructions such students are protected from military service provided they are, if over the age of 31 on the 25th February last, in a category lower than "A" and, if under that age, in a category lower than B 1, and for the time being any man who is placed in Grade 2 by a National Service Medical Board is for the purpose of these instructions treated as being in a category lower than B 1. It is presumed that the second year students now studying in the schools are, with possibly few exceptions already protected under these instructions, and in view of the urgent need of the Army for men in the higher medical categories, Sir Auckland Geddes is not prepared to extend the protection already given to veterinary students now in civil life.

I am to add that in the immediate future it is thought that the reduction in the number of cattle in Great Britain should relieve the situation as regards the need of veterinary surgeons and demobilisation after the war will release a considerable number of men who are now employed in the Army as veterinary surgeons.—I am, Sir, your obedient servant,

(Sd) J. M. BALFOUR, Asst. Secretary.

The Secretary, Royal College of Veterinary Surgeons.

ANNUAL REPORT, CITY OF BIRMINGHAM.

[The following sections form part of, and are incorporated in, the Report of the M.O.H., John Robertson, M.D., B.SC., for the year 1916. The report itself is a good one from the view of medical administration. The sections which we reproduce, slightly abridged and omitting tables, show continued effort in connection with the milk supply; and a brief but useful *résumé* of the position of contagious disease in animals.]

Inspection of Cows and Cowsheds in the City.

J. Malcolm, F.R.C.V.S.,

During the year 1916 the inspection of cows has been systematically carried out by the Veterinary Inspectors as heretofore, though fewer visits have been made owing to the war reduction in the Veterinary staff. The numbers in the city at the end of the year were as follows:—

Cowkeepers.	Dairy Farms.	Sheds.	Cows.
141	149	342	2025

During the year seven farmers have commenced and one former dairy-farmer has resumed cow-keeping. Eight dairy-farmers have discontinued keeping cows. There are thirty-six other farms where dairy cows were formerly kept, but where none are at present.

1907 visits of inspection have been paid to cowsheds in the city area. At each visit the Veterinary Inspector examined both cows and cowsheds.

Forty cows were found affected with catarrhal mastitis or inflammation of the udder, and six with emaciation, two of which proved to be due to Johne's disease and four to anæmia. The milk from these cows was prohibited from sale, temporarily or permanently, according to the case.

The continued scarcity of labour has made it very difficult to maintain the former high standard of cleanliness of the cows and cowshed in some instances, but the great majority of the farmers have continued to do their best, and on the whole the condition of the cowsheds and the cleanliness of the cows inspected have have been satisfactory.

Tuberculosis and the Milk Supply.

The effort to reduce the amount of tubercle infection in the milk sold in the city has been continued on the lines of previous years: (*a*) The detection of infected milk; (*b*) The detection of cows with tuberculosis of the udder or others giving infected milk; (*c*) The eradication of tuberculosis from dairy herds supplying milk to the city.

Mixed Milks. Twenty-five samples of mixed milk have been taken during the year. Of these seven were taken at the farms and eighteen at city railway stations. Three of these were found to contain tubercle infection, and the offending cow in each case was subsequently traced.

Individual Milks. Forty-six samples were taken from individual cows at the farms; nine of these were found to contain tubercle infection. The milk from the infected cows was at once prohibited from sale and eight of the cows were subsequently slaughtered. The ninth cow was purchased for Prof. Leith, to provide him with tubercle infected milk for his research work; she was subsequently slaughtered. The cow mentioned in last year's report as purchased for Prof. Leith's research work created a record, in that she gave tubercle infected, though quite normal looking, milk for a continuous period of fourteen months.

Eradication of Tuberculosis from Dairy Herds.

During the year twenty-eight herds were dealt with, and twenty-five of these, numbering 629 cows, were free at the end of the year, and three herds, numbering 107 cows, were being freed. The testing of two herds had been discontinued.

The results of the testing, which had been carried out half-yearly, again show that breeding dairy herds into which only young heifers are introduced can be maintained in a tubercle-free state easily and economically. On the other hand, those Birmingham herds which have to be kept up by the purchase of mature milking cows can only be kept free with some difficulty, though Birmingham dairy farmers systematically buy the best cows they can obtain. This difficulty is owing to the non-reaction to tuberculin of some of the new purchases, which is due either to their being very recently infected, or to their having acquired a tolerance to the tuberculin test as a consequence of their having been previously recenty tested.

It is here of interest to record that in establishing tubercle-free herds, and keeping such up by home breeding, these herds have been coincidently maintained free from two other contagious diseases, *viz.*, contagious abortion and Johne's disease. It is found that when a herd is free from these diseases, and is kept up by home breeding, it is maintained free, since such diseases are set up in a free herd by the introduction of infected stock.

A point of real importance in connection with the spread of tuberculosis is the easy transmission of the disease from healthy-looking tuberculin reactors to tubercle-free cattle. Our experience is that very soon after a recently infected cow becomes a reactor she becomes capable of transmitting infection, so that many tubercle-free cows rapidly become infected by healthy-looking ones in the early stage of the disease; in fact, any reacting cow, however recently affected and however healthy-looking, must be regarded as liable to spread the disease.

From a tabulated list it will be seen that 1668 cows were tested during the year, of which 1453 passed and 215 failed to pass.

The cows which failed were again in most cases cows which were purchased subject to passing the test, and having failed were returned to the vendor. The doubtful reactors already in the herd were isolated and retested a month subsequently; about fifty per cent. of these eventually passed.

The newly purchased and other cows tested for the time last year numbered 316. Of these 61, or 19·30 per cent., reacted, and 21, or 6·64 per cent., were doubtful, *i.e.*, 25·94 per cent. failed to pass the test as compared with 22·79 last year.

The testing of the herds was carried out partly by a Corporation Veterinary Officer and partly by the dairymen's Veterinary Surgeons, acting on behalf of the Corporation. The herds dealt with are visited periodically to see that the reactors are isolated from the free, that the cows in the free herd are being properly looked after, and that the hygienic regulations are complied with.

The extra cost of this work during the year was £189 3s. 4d., of which £39 19s. was for tuberculin and £149 4s. 4d. for veterinary fees and expenses. In 1915 the extra cost was £115 14s 7d., and in 1914 £168 3s. 7d.

Contagious Diseases of Animals.

I have pleasure in submitting report on the occurrence of some of the chief scheduled contagious diseases in animals here during 1916.

Glanders and Farcy. There has been one case of this disease in Birmingham during the year; this was undoubtedly introduced from outside. Fortunately, the precautions taken against the spread of infection proved successful, and no other case or suspected case occurred. It is again some satisfaction to be able to record its continued decline throughout the country. Last year there were 46 outbreaks, in which 117 animals were attacked, against 50 outbreaks with 95 animals attacked in 1915, 97 outbreaks with 286 animals attacked in 1914, and 789 outbreaks with 2433 animals attacked in 1908—the first year under the present Glanders Order. Possibly the end of the war may again see some increase in this disease, but with the recently acquired accuracy in diagnosis, the final extermination of this loathsome disease should not be long deferred.

Anthrax. Eleven cases of suspected anthrax in animals were reported last year. After examination only six were proved to be cases. One of these occurred in a bull at a public sale of shorthorns. In two cases the infected carcases were sent to the abattoir, with a view to their being passed for food; one of these was from an outside farm, the other from a city farm. The other three cases died on farms in the city and were at once reported to the Local Authority. Three of the cases occurred on a farm where there was no record of any previous case of anthrax, the animals being fed on one maker's cake, but examination of the cake, proved negative. The fact that two of the infected carcases were found to have been sent to the abattoir, with a view to their being passed for human food, shows the necessity for constant expert inspection of all meat that is to be used for human food.

Rabies. Two cases of vicious dogs were submitted here, but in neither was there any symptom really suspicious of rabies. The fact that in the preceding year one case of rabies was imported shows the necessity for retaining the present measures against the introduction of this fatal disease.

Swine fever. During the year 134 cases of sick or dead pigs have been submitted to me for inspection. In addition 22 cases have been dealt with by one of the whole time Veterinary Inspectors of the Board of Agriculture, who certified sixteen of them to be swine fever cases and the others not. Of the 134 cases submitted to me, 36 presented symptoms more or less suspicious of swine fever, and of these 20 ultimately proved to be cases.

During the year the system of passive immunisation by serum against swine fever inaugurated by the Board of Agriculture in the preceding year has continued in force. The initial success noted in that year has not only been maintained but surpassed. Indeed, in my experience, in properly selected herds, where all clinically affected pigs have been slaughtered, and an adequate system of isolation prescribed, the serum immunisation has proved an unqualified success, and I am satisfied that if this system were to be supplemented by a modification in the common law requiring all pigs sold to be guaranteed by their vendors as free from swine fever at the time of sale, the prevaleuce of the disease would soon show such a marked diminution as to foreshadow the successful eradication of swine fever.

Parasitic mange in horses. There were 16 horses under detention for mange at the beginning of 1916, and 45 horses were certified as affected during the year. Of the 16 first mentioned 11 made good recoveries. and the other five, being old and worn out horse and not worth prolonged treatment, were slaughtered by their owners. Of the 45 certified during the year three old worn out horses have been slaughtered, 37 have been cured, and 5 were under detention at the end of the year.

The number certified during the year (45) compares favourably with 111 during the preceding year. The lessened movement of horses for army purposes during 1916 as compared with 1915, is no doubt largely responsible for the diminution in the number of cases.

The Mange Order has proved a valuable measure: the amount of equine suffering and horse owners' loss would have very much greater but for this Order.

Johne's Disease. Perhaps a note on this very prevalent, incurable, contagious disease, though it is not included in the list of the Board of Agriculture's scheduled contagious diseases, may not be inappropriate. This disease, although its true character has only been recognised for the last ten years, is now known to be widely distributed, and the number of Johne-affected animals that come into the Birmingham abattoirs is much larger than is generally known. Indeed, as much Johne-affected meat is condemned as unfit for human food in Birmingham to-day as is condemned from being affected with tuberculosis.

If it were more generally known that recovery from Johne's disease (in the light of our present knowledge) is hopeless, that the longer Johne-infected cattle are kept alive the less is their value, until they are finally valueless, and that while they live they spread the infection of the disease, stockowners would speedily limit their expenses and cut their losses from Johne by immediately having their affected animals slaughtered.

INVESTIGATIONS INTO THE INFECTION BY ONCHOCERCA IN CATTLE IN THE NORTHERN TERRITORY OF AUSTRALIA.

On 6th January, 1914, experiments were commenced by J. F. McEachran, M R.C.V.S., and Gerald Hill, F.E.S., for the purpose of investigating and determining, if possible, the nature of the intermediary hosts of *Onchocerca gibsoni*, the cause of Worm Nodules in cattle.

For these experiments six calves, one of which died on the voyage to the Territory, were obtained from Victoria, where worm nodules are very rarely found in locally-bred cattle. These calves were about six months old, and were tested for tuberculosis before being shipped for the Territory. No precautions were taken during the voyage to protect them from the bites of flies and mosquitoes. Two calves were placed in an open pen, two in a screened pen, and one, together with a locally-bred calf, with the dairy herd. All were slaughtered in July, August, and September, and the results were recorded, and published by the Department of Trade and Customs.

In these experiments calves in screened and open pens 30 yards from infected cattle did not become infected, whilst calves, both Victorian and locally bred, grazing with dairy herd became infected, definite nodules being found. Thus the only imported calf to become infected was the one that was in direct contact with infected cows of the dairy herd.

It was decided to carry out further experiments on the same lines, but during the period July or August to January or February. To this end, negotiations were entered into with the Department of Agriculture in Victoria for the supply of six female calves six months old. The calves were tested for tuberculosis, with negative results, and shipped to Darwin, where they arrived on 26th July, 1915. No special precautions were taken on the ship to prevent the calves being bitten by flies and mosquitoes, but during their passage from the ship to the experimental laboratory at Fannie Bay they were watched carefully, and no insects were seen to bite them.

Two calves (*a*) and (*b*) were placed in screened pen (A), two calves (*c*) and (*d*) were placed in open pen (B), and two calves (*e*) and (*f*) were allowed to go free in the paddock with three infected local cows. A control calf (*g*), locally bred and three months old, was also placed in the paddock with the infected cows.

Pens (A) and (B) were the same as those used in the previous series of experiments, but they were cleansed and whitewashed, and the concrete floors were repaired before being used the second time. The screened pen (A) was enclosed with fine brass wire gauze, and the entrance to it was through a porch with double doors.

During the course of the experiments no biting insects or ticks were found in this pen, either on the calves on the walls or floors, but *Musca domestica* gained access to it on several occasions. On 3rd March, *i.e.*, three weeks before they were killed for *post-mortem* examination, the calves broke through the wire gauze, but were quickly replaced and the gauze repaired. As these calves showed no nodules on *post-mortem* examination, it is our opinion that this short exposure to the attack

of biting insects did not in any way affect the results of the experiments.

Throughout these experiments, calves (*a*), (*b*), (*c*), and (*d*), in the screened and open pens, were fed on fodder imported from Victoria, and no locally-grown matter was used as bedding. Calves (*e*), (*f*), and (*g*), running in the paddock with infected cattle, had their grass feed supplemented by locally-grown rice chaff. The only drinking water used by the latter was obtained from a bore 116 feet deep. This water, which was not subjected to an examination, was provided in an iron trough which was rarely, if ever, cleaned out during the course of the experiments, but which was replenished every day. Water from the same bore was supplied daily to the penned calves in galvanised iron buckets.

These calves were kept in a paddock on high ground, to prevent their coming into contact with swampy land, but a week before being slaughtered, they broke through the dividing fence and reached temporarily inundated ground, though only for a short time. The paddock in which they were kept was tick infested, and the calves had to be treated periodically in order to destroy the ticks.

During the period 14th February to 21st February, six early morning examinations of the calves were made with the object of discovering a possible ground-living vector that might bite the calf whilst lying down, but drop off as soon as the calf rose from the ground. The examinations were, therefore, made as soon as the calves rose, the briskets and under portions of the belly being searched.

Searches were also made of the patches of ground on which the calves had lain, but on no occasion was any possible parasite found. Further early morning examinations of grass and soil upon which cows had rested overnight were made on six occasions in February and March, in the vicinity of Darwin, with negative results. In both localities, however, a thorough search was rendered most difficult owing to the luxuriance of the pasturage.

Post-mortem.—1. Grazing with Infected Cattle.

On the 20th March, 1916, *i.e.*, nearly eight months after arriving in the Territory, imported calf (*e*) was killed and a post-mortem examination was made.

Two small nodules about the size of a pea were found on the right side of the brisket in the region of the junction of the sternum and the xiphoid cartilage. No nodules were found in any other part.

Imported calf (*f*) was killed for post-mortem examination on March 30th, and one small nodule, about the size of a split pea, was found between the fourth and fifth ribs on the right side. None were found in any other part. This calf showed many hæmolymph glands.

Control calf (*g*) (nine months old and Territory bred) was killed on the 22nd May, and one nodule, about three-fourths of an inch long and half-an-inch wide, was found at the third rib on the right side.

The nodules were sectioned and examined by one of us, and later by Dr. Gilruth, and the presence of *O. gibsoni* confirmed.

Comment.—This experimant confirms the finding of McEachran and Hill, that calves reared in the vicinity of experimental pens and allowed to graze with infected cattle, themselves became infected, as do imported calves from a nodule-free State living under the same conditions. Further, as these calves were confined to a high, well-drained paddock up to within a week of slaughter, it is obvious that infection was not by a purely aquatic animal, unless in the bore water, which seems improbable.

2. Biting insects.

Imported calves (*c*) and (*d*) were placed in open pen (B) on 27th July, 1915. The pen had a concrete floor and was enclosed by two walls and a roof, the remaining two sides being quite open, allowing ingress of flying and crawling Arthropods. The infected cattle grazing in the paddock could come up to 30 yards from the penned calves (*c*) and (*d*), and, indeed, were encouraged to do so by being fed there, but were never in actual contact with them.

From the latter part of November until the date of slaughter these calves were exposed to the attack of biting flies, and, as in the case of the former experiments, we know that they were frequently bitten by *Tabanus mastersi* (Walker), *Tabanus nigritarsis* (Taylor), *Stomoxys calcitrans* (Lynn), and *Lyperosia exigua* (de Meijere).

Flies of the last-named species were very troublesome to these calves in February and March, causing the characteristic sores on the brisket, under surface of the throat and inner canthi of the eyes. It is almost certain that they were bitten also by several species of *Culicidæ*, and probably by "sand-flies."

Buffalo lice (*Hæmatopinus tuberculatus*, Burn), which were found on calves occupying this pen during the first series of experiments, were not found on these calves, nor, indeed, upon any cattle depastured in the vicinity of the laboratory during the period July, 1915, to April, 1916. On the other hand, ticks, *Boophilus australis* (Fuller), which were not found on any of the experimental calves used by McEachran and Hill, were more or less numerous on both calves throughout the period of these experiments, necessitating the use of dipping fluid on several occasions.

These calves were slaughtered for post-mortem examination on 22nd March and 3rd April respectively, both with negative results.

Comment. The negative results of this experiment appear to eliminate from the list of possible vectors *Tabanus mastersi*, *Tabanus nigritarsis*, *Stomoxys calcitrans*, *Lyperosia exigua*, and *Boophilus australis*. It should be stated, however, that our observations show that certain species of *Tabanidæ*, notably *Tabanus rufinotatus* (Bigot) and *Tabanus cinerescens* (Macleay) rarely, if ever, attack stock under a roof.

We have no definite record of the species of mosquito that bit the calves in this pen or in the particular open paddock, but it is fairly safe to assume that the occupants of this pen and the calves grazing in the open paddock were frequently bitten by the following common species, namely, *Myzorhyncus bancrofti* (Giles), *Culicelsa vigilax* (Skuse), *Chrysoconops acer* (Walker), *Culex sitiens* (Wied), *Pseudoskusea basalis* (Taylor), and *Tæniorhynchus uniformis* (Theob), all of which are more or less plentiful in the near neighbourhood.

3. Control—Insects.

Imported calves (*a*) and (*b*) were placed in a screened pen (A) on 27th July, 1915. During the whole course of the experiments no biting insects or ticks were found in the pen, though, as previously mentioned, the calves were exposed to the attacks of insects for a short period one afternoon, owing to their breaking rhrough the wire gauze.

Post-mortem examinations were made on calf (*a*) on 24th March, and on calf (*b*) on 10th April, both with negative results. This experiment was practically a repetition of the 1914 experiment in the same pen, and the post-mortem finding in each case was negative.

Summary of Experiments.

1. Calves from a nodule-free State become infected within eight months of their arrival in the Territory when grazing on high, dry ground, along with infected cattle.

2. Calves from a nodule-free State did not become infected during the same period when inclosed in an

open pen with concrete floor within thirty yards of a paddock within which affected cattle were depastured, although exposed to the attacks of winged and apterous *Arthropoda*.

3. In view of the post-mortem findings in experiment No. 2, negative results were to be expected in experiment No. 3, in which calves were prevented from attacks of the same *Arthropoda* by fly-proof netting.

Conclusion.

The results of this series of experiments have not led to the discovery of an intermediary host of the parasite causing *Onchocerciasis* in cattle, but they have definitely excluded certain species that have been considered as possible vectors, namely, *Lyperosia exigua*, *Stomoxys calcitrans*, *Tabanus mastersi*, *T. nigritarsis*, *Boophilus australis*, and any purely aquatic forms other than those possibly found in the bore-water.

Further, we consider that the mosquitoes referred to in the comments on experiment No. 2 might safely be added to the above list of excluded vectors.

Buffalo and Zebu Cattle.

During the period April–June, 1916, six aged and two young wild Swamp Buffaloes, which were shot in the vicinity of Darwin, were carefully examined for Worm Nodules by one of us, the results being negative, as in previous examinations. Wild Zebu cattle and domestic cattle grazing on the same country are invariably infected. the former apparently more heavily than the latter.

From one heavily infected Zebu bull a well-developed and typical nodule was removed from the tissues immediately under the skin, eight inches behind the junction of the last sternal rib with the sternum, and twelve inches from the median line of the belly.

In none of our examinations of Zebu and domestic cattle have we been able to discover *O. gibsoni* behind the femoro-tibial joint.

Campbell G. Dickinson, B.V.Sc.
Chief Veterinary Officer.

Gerald F. Hill, F.E.S.,
Government Entomologist.

Darwin, Northern Territory,
15th August, 1916.

ARMY VETERINARY SERVICE

Extracts from *London Gazette*,

War Office, Whitehall, Dec. 14.

Regular Forces. Army Veterinary Corps.

Temp. Lt. to be temp. Capt. :—H. Hicks (Dec. 1).

Temp. Qrmrs. and Hon. Lieuts. to be Hon. Capts. :—R. Lovett (Dec. 5); J. Fisher (Dec. 6).

Dec. 13.

Col. (temp. Brig.-Gen.) L. J. Blenkinsop, D.S.O., from Dir. of Vety. Servs. in Inria, to be Dir.-Gen., and to be granted the hon. rank of Maj.-Gen., *vice* Col. (Hon. Maj. Gen.) Sir R. Pringle, K.C.M.G., C.B., D.S.O. (Dec. 1).

Dec. 18.

To be temp. Lieut. :—J. Craig, W. S. Petrie, J. P. Rice (Nov. 12).

Dec. 19.

Temp. Lt. J. White relinquishes his commn. (Dec. 20).

The following casualty is reported :—

Wounded—Capt. J. S. Keane, attd. R.H.A.

OBITUARY.

James McKenny, M.R.C.V.S., Stephen's Green, Dublin. Graduated, Albert Coll: April, 1867.

By the death of James McKenny, of Dublin, the veterinary profession has lost an able and active member; a man who was justly regarded as one of the pillars of his profession in Ireland. He was one of the old school, attracted to the profession by a keen love of animals: a disciple of Gamgee, and a pupil of the late Prof. Fergusson, whose practice in Dublin he took over many years ago. Mr. McKenny was certainly an enthusiast and a hard worker; he was well-known, and enjoyed a high class reputation all over Ireland. He loved his work and had an honest ambition to ever in the fore-front; and always upheld the dignity of the profession.

The genius of his inventive mind is well exemplified in the many useful instruments and appliances with which his name is identified. Good natured to a degree, Jas. McKenny was ever ready and willing to help and advise, and he would discuss, even with the youngest graduate, any matter of veterinary interest. Many well-known practitioners of to-day served their pupilage with him.

There is no greater example of untiring devotion to the welfare of the profession than McKenny's record in connection with the V.M.A. of Ireland. Though a busy man, he acted as Secretary to the Association for about *thirty years*. He kept the Association alive in spite of adverse circumstances: he organised and attended meetings, and had filled every office of the Association with ceaseless energy. It is undoubtedly to his great efforts that we owe the existence to-day of the V.M.A.I.

A lover of sport; he loved a horse, especially one that could trot on. For years he was identified with the trotting track, and owned some famous trotters, including the celebrated Pliny, the sire of many winners.

A kindly, genial soul, McKenny was a host in himself; he loved a discussion and a controversy, and had a store of knowledge about Dublin and its history. He was a well-known and respected citizen of Dublin, and had the honour of being elected, years ago, a Freeman of the City.

He has left a widow and an only son, who is a doctor in Hong Kong. They will mourn his loss. His many acquaintances and colleagues will miss him—they have lost a friend; and the veterinary profession is poorer by the loss of an honourable and worthy member.

P. J. H.

The late Carr Bey.

[Extract from *The Sudan Times*, dated, Khartoum, November 17th, 1917.]

We regret ts announce the death of El Maralai F. U. Carr Bey, Principal Veterinary Officer, Egyptian Army, and Director Veterinary Department, Sudan Government, which took place in London, on Saturday the 10th inst.

The late Lieut.-Col. Frederick Ulysses Carr received his commission as Lieutenant in the Army Veterinary Department early in 1895. He served on the North-Western Frontier of India on the Mohmand and Tirah Expeditions in 1897-98, receiving the medal with two clasps.

He served throughout the South African war, in which he was severely wounded and promoted Veterinary Captain. Among other operations, he was present at Sanna's Post, and received the Queen's medal with six clasps, and the King's medal with two clasps.

Towards the end of the operations in South Africa he was attached to the Staff of the Remount Commission presided over by Lord Downe, and visited South Africa, Australia, and New Zealand with this Commission.

From 1903 to 1906 he was employed with the West

African Frontier Force in Northern Nigeria, receiving the medal with clasp.

He was seconded to the Egyptian Army in September, 1908, and received the Sudan medal with clasp for the operations in Southern Kordofan in 1910.

At the outbreak of the European War in August, 1914, Lieut.-Col. Carr proceeded to France with the First Division taking part in the retreat from Mons, and the battle of the Marne and the Aisne. He was recalled to the Sudan in October, 1914.

While serving with the Egyptian Army he was granted the 4th Class Order of the Osmania, and the 3rd Class Order of the Nile, and was mentioned in despatches in connection with the operations in Darfur, 1916.

It was in his capacity as Director of the Veterinary Department, Sudan Government, that Lieut.-Col. Carr was best known in the Sudan, and as such he was responsible for the export trade in livestock. The expansion of this trade during the last few years—from a value of about £E 40,000 in 1908, to that of £E 380,000 in 1915—is one of the most remarkable facts in the economic history of the Sudan to date, and it is no exaggeration to say that it was almost entirely due to the late Lieut.-Col. Carr's personal efforts and influence. He possessed in a remarkable degree the power of inspiring affection and loyalty in his subordinates and his death at the early age of 45 years is a distinct loss to the Administration of the Sudan.

VETERINARY SURGEONS AND CIVIC SERVICE.

Dear Sir,—Last week you told us, not quite directly, perhaps, that it is the duty of our members to accept civic duty where they are able to do so, and that honours which come to them in such positions are in a measure reflected on the profession. With that dictum I am in full accord, and Mr. T. Chambers, as the latest exponent, has my congratulations and good wishes.

Every man who is born to and accepts the benefits of a complex community owes service to that community: but it does not fall to all of us to serve in the same measure nor in the same manner. I am enclosing a cutting from a Northern journal which records the long service of one of our members to a section of the community with which we are nearly concerned; and I would suggest that his work in that direction has been of national benefit, inasmuch as the economy effected in handling the aggregate of these goods in bulk instead of in detail is a national saving; in addition to the advantage and encouragement afforded to the users—the agriculturalists. It is satisfactory to see that his years of service are freely acknowledged in his own country.—Yours faithfully,

SOUTHTON.

"Three notable agriculturists.—Mr. J. E. Brockbank, Heathfield, chairman, and Mr. J. M'Mullan, Plaskett Lands, vice-chairman of the Aspatria Agricultural Co-operative Society, have tendered their resignations owing to increasing age. The secretary is Mr. Hy. Thompson, M.R.C.V.S., Aspatria. The length of service of chairman, vice-chairman, and secretary totals to 130 years, and the combined ages to 246 years. The three are spoken of by the members as fine specimens of the auld Cumberland yak (oak). Mr. Brockbank, a member of the Society of Friends, is a large and successful farmer; Mr. M'Mullan is one of four brothers who have each made a fortune farming, and Mr. Thompson is an originator of the society, the oldest in England, and has been called the Grand Old Man of Agricultural co-operation. A man of wonderful energy and versatility, he is the author of several works on veterinary science, a prolific writer, a ready speaker, a wit and raconteur with a genius for friendship that has won him the good will and respect of the Cumberland farming community. When he gave veterinary lectures under the County Council he was unconventional enough to vary the proceedings with a song, and he threw so much wit and humour into his discourses that farmers for miles round came to hear him. He is an enthusiastic advocate of the application of salt to land as a means of killing parasitic life, keeping stock healthy and thriving, and obtaining crops free from disease."

DISEASES OF ANIMALS ACTS 1894 TO 1914, SUMMARY OF RETURNS.

Period.	Anthrax		Foot-and-Mouth Disease.		Glanders.†		Parasitic Mange. ‡		Sheep Scab.	Swine Fever.	
	Outbreaks (a)	Animals.	Outbreaks (a)	Animals.	Outbreaks (b)	Animals.	Outbreaks (b)	Animals.	(b)	Outbreaks (a)	Slaughtered. *
GT. BRITAIN. Week ended Dec. 15	7	8				2	87	140	25	26	7
Corresponding week in 1916 ...	14	15			1	1	48	95	34	53	22
Corresponding week in 1915 ...	10	10	1	1			31	46	15	76	207
Corresponding week in 1914 ...	13	15			2	2			10	78	375
Total for 50 weeks, 1917	407	463			24	55	2415	4484	500	2059	863
Corresponding period in 1916 ...	523	622	1	24	46	115	2021	4443	318	4164	9083
Corresponding period in 1915 ...	556	622	56	702	48	84	839	1798	216	3852	16929
Corresponding period in 1914 ...	692	755	24	124	94	281	1530	2642	203	4221	38717

‡ The Parasitic Mange Order of 1911 was suspended from 6th August, 1914, to 27th March, 1915, inclusive.
(a) Confirmed. (b) Reported by Local Authorities. † Counties affected, animals attacked:—Worcester 2
Board of Agriculture and Fisheries, Dec. 18, 1917 Excluding outbreaks in army horses.

IRELAND. Week ended Dec. 8	...	...	...	...	...	...	Outbreaks ...	19	1	...
Corresponding Week in 1916 ...	...	...	...	...	...	...	1	11	5	55
Corresponding Week in 1915 ...	...	...	...	...	...	...	...	8	2	32
Corresponding Week in 1914 ...	...	...	...	...	...	...	1	8	2	24
Total for 49 weeks, 1917 ...	3	5	...	...	1	1	41	395	197	1127
Corresponding period in 1916 ...	3	7	...	...	...	...	60	426	299	1765
Corresponding period in 1915 ...	2	2	...	...	1	3	68	386	238	1339
Corresponding period in 1914 ...	1	1	76	957	...	...	75	462	187	943

Department of Agriculture and Technical Instruction for Ireland, (Veterinary Branch), Dublin, Dec. 12, 1917.
NOTE.—The figures for the Current Year are approximate only. * As diseased or Exposed to Infection